

## Montana Board of Oil and Gas Conservation Environmental Assessment

Operator: TAQA North USA, Inc.  
Well Name/Number: Hellegaard 8-1H-1  
Location: NE NE Section 8 T37N R57E  
County: Sheridan, MT; Field (or Wildcat) Wildcat (Flat Lake Field)

### Air Quality

(possible concerns)

Long drilling time: No, 20-30 days drilling time.

Unusually deep drilling (high horsepower rig): Heavy double derrick drilling rig 900-1000 HP (Estimated) to drill a Bakken formation single lateral horizontal well, 12,559' MD/7,768' TVD.

Possible H<sub>2</sub>S gas production: Slight chance H<sub>2</sub>S gas production from Mississippian Formations.

In/near Class I air quality area: No Class I air quality area nearby.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under 75-2-211.

Mitigation:

☒ Air quality permit (AQB review)

☐ Gas plants/pipelines available for sour gas

☐ Special equipment/procedures requirements

☐ Other: \_\_\_\_\_

Comments: To drill a Bakken formation single lateral horizontal well, 12,559' MD/7,768' TVD. If there are existing pipelines for natural gas in the area then associated gas must be tied into system or if no gathering system nearby associated gas can be flared under Board Rule 36.22.1220.

### Water Quality

(possible concerns)

Salt/oil based mud: Intermediate string hole will be drilled with oil based invert mud system (Distillate 822 Drilling Fluid) and openhole horizontal production hole will be drilled with fresh water polymer drilling fluids. Surface casing hole will be drilled with freshwater and freshwater mud system.

High water table: No high water table anticipated.

Surface drainage leads to live water: Yes, closest drainage is an unnamed ephemeral drainage, about 1/16 of a mile to the south from this location. Ephemeral drainage drains to a pothole lake about 1/2 of a mile to the southwest from this location.

Water well contamination: None, closest water wells in the area are about 1/2 of a mile to the southwest, about 1/2 of a mile to the west, about 5/8 of a mile to the south southwest and about 5/8 of a mile to the southeast from this location. Depth of these domestic and stockwater wells range from 215' to 95'.

Surface hole will be drilled with freshwater and freshwater drilling muds. The surface casing setting depth of 1250' should be below all freshwater zones.

Porous/permeable soils: No, sandy clay soils.

Class I stream drainage: No, Class I stream drainages.

Mitigation:

☐ Lined reserve pit

☒ Adequate surface casing

☐ Berms/dykes, re-routed drainage

☒ Closed mud system

☒ Off-site disposal of **solids/liquids** (in approved facility)

☒ Other: Freshwater drilling fluids will be land applied with surface owner approval.

Comments: 1250' surface casing well below freshwater zones in adjacent water wells. Also, covering Fox Hills aquifer. Adequate surface casing and BOP equipment to prevent any problems. (BOP's 3,000psig annular, pipe and blind rams) rule 36.22.1014.

## Soils/Vegetation/Land Use

(possible concerns)

Steam crossings: None anticipated.

High erosion potential: Yes, cut slopes have a high erosion potential. Moderate cut, up to 31.5' and moderate fill, up to 14.4', required. Location is on the same drill pad as the Hellegard 8-1H-1 well.

Loss of soil productivity: None, location to be restored after drilling well, if nonproductive. If productive unused portion of drillsite will be reclaimed.

Unusually large wellsite: No, large well site 450'X500' designed for a dual well location, Hellegard 8-1H-1 and Hellegard 8-1H-2.

Damage to improvements: Slight, surface use is a cultivated field.

Conflict with existing land use/values: Slight

Mitigation

☐ Avoid improvements (topographic tolerance)

☐ Exception location requested

☒ Stockpile topsoil

☐ Stream Crossing Permit (other agency review)

☒ Reclaim unused part of wellsite if productive

☐ Special construction methods to enhance reclamation

☐ Other \_\_\_\_\_

Comments: Access will use existing county road, Ueland Road, a section line road and existing farm/lease road along section lines. Access is same as for the Hellegard 8-1H-2 well. A short road of about 1568' will be built off the existing farm/lease road into this location.. Surface hole (freshwater) cuttings will be mixed buried on site Oil based invert mud cuttings will be trucked to an approved waste disposal facility. Oil based drilling fluids will be recycled to the next location or returned to the mud company's recycling facility. Freshwater surface fluids and horizontal freshwater polymer fluids and cuttings will be land applied. No concerns.

## Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Residence ½ of a mile to the west and 1.325 miles to the southeast from this location.

Possibility of H2S: Yes, slight from Mississippian Formations.

Size of rig/length of drilling time: Heavy double drilling rig 20 to 30 days drilling time.

Mitigation:

☒ Proper BOP equipment

☐ Topographic sound barriers

☐ H2S contingency and/or evacuation plan

☐ Special equipment/procedures requirements

☐ Other: \_\_\_\_\_

Comments: Adequate surface casing cemented to surface with working BOP stack should mitigate any problems. (BOP's 3,000psig annular, pipe and blind rams) rule 36.22.1014.

## Wildlife/recreation

(possible concerns)

Proximity to sensitive wildlife areas (DFWP identified): None identified.

Proximity to recreation sites: None identified.

Creation of new access to wildlife habitat: No

Conflict with game range/refuge management: No

Threatened or endangered Species: Only species identified as threatened or endangered are the Whooping Crane and Piping Plover. Candidate species is the Spragues Pipit. NH Tracker site indicates 15 species of concern, they are as follows: Bard's Sparrow, Le Conte's Sparrow, Nelson's Sparrow, Sprague's Pipit, Ferruginous Hawk, Chestnut Collared Longspur, Piping Plover, Black Tern, Sedge Wren, Evening Grosbeck, Yellow Rail, Bobolink, Whooping Crane, McCown's Longspur and the Smooth Greensnake.

Mitigation:

- ☐ Avoidance (topographic tolerance/exception)
- ☐ Other agency review (DFWP, federal agencies, DSL)
- ☐ Screening/fencing of pits, drillsite
- ☐ Other: \_\_\_\_\_

Comments: Private cultivated surface lands. There may be species of concern that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to what he would like done, if a species of concern are discovered at this location.

### **Historical/Cultural/Paleontological**

(possible concerns)

Proximity to known sites: None identified.

Mitigation

- ☐ avoidance (topographic tolerance, location exception)
- ☐ other agency review (SHPO, DSL, federal agencies)
- ☐ Other: \_\_\_\_\_

Comments: Private cultivated surface lands. There may be possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite.

### **Social/Economic**

(possible concerns)

- ☐ Substantial effect on tax base
- ☐ Create demand for new governmental services
- ☐ Population increase or relocation

Comments: No concerns. Wildcat well within an existing oil field, Flat Lake Field.

### **Remarks or Special Concerns for this site**

Wildcat Bakken formation horizontal well within an existing oil field, Flat Lake Field

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### **Summary: Evaluation of Impacts and Cumulative effects**

No long term impacts expected. Some short term impacts will occur, but can be mitigated in a short time.

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I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major

action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): /s/Steven Sasaki  
(title:) Chief Field Inspector  
Date: June 12, 2012

Other Persons Contacted:  
Montana Bureau of Mines and Geology, Groundwater Information Center website.

(Name and Agency)  
Sheridan County water wells  
(subject discussed)  
June 12, 2012

(date)  
US Fish and Wildlife, Region 6 website  
(Name and Agency)  
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA  
COUNTIES, Sheridan County  
(subject discussed)

June 11, 2012  
(date)

Montana Natural Heritage Program Website (FWP)  
(Name and Agency)  
Heritage State Rank= S1, S2, S3, T37N R57E  
(subject discussed)

June 11, 2012  
(date)

If location was inspected before permit approval:  
Inspection date: \_\_\_\_\_  
Inspector: \_\_\_\_\_  
Others present during inspection: \_\_\_\_\_